AMENDMENT TO THE DRAWINGS:

Please find attached hereto, one sheet of replacement drawings with Figs. 6-10. Reference number --32s-- and two lead lines have been added in Fig. 7.

REMARKS

In the Office Action of April 25, 2005, there were a number of formal objections.

First, it was said that the cross-reference to the related application and the mention of government-sponsored research were not in the correct order. This has been corrected by the amendment to paras. 0001 and 0002.

Second, the Abstract was objected to for use of the word "said," and this has been corrected by the Amendment to the Abstract.

Third, there was an objection to the title. The title is believed to be descriptive of the invention, once the invention is understood in relation to the prior art, as will be explained below. This matter is deferred pending the explanation below.

Fourth, with respect to the prior art status of U.S. Pat. No. 6,573,634, please note that the benefit of the provisional filing date of May 22, 2003, for Figs. 1a, 1b and 1c, which is claimed herein, is earlier than the issue date of U.S. Pat. No. 6,573,634 (June 3, 2003). U.S. Pat. No. 6,573,634 is not prior art under 35 U.S.C. 102 (b). It is also not an anticipation, and it not prior art under 35 U.S.C. 103 as the inventive entity is the same and the inventions are commonly owned. Therefore, U.S. Pat. No. 6,573,634 is not technically prior art under the patent laws of the United States. Therefore, it is not seen that MPEP 608.02 applies in this instance, so as to require labeling of Figs. 1a, 1b and 1c as prior art.

Fifth, with respect to the first objection to the drawings, a drawing amendment is proposed herein to identify the slits 32s previously described in the specification in para. 0031 and previously shown, but not numbered, in Fig. 6. Para. 0031 and claim 6 have also been amended in view of the drawing.

With respect to the second objection to the drawings, it is believed that sufficient illustration is already provided in the drawings to understand the use of the

machine as a generator. In the Office Action, it was said that the windings 35a, 36a and 31b provide flux to the machine, but that no structure was disclosed for converting flux to electric current.

In the motor version of the machine, current through the stator windings produces flux which provides electromotive force for causing the rotor to rotate and move the drive shaft 33. In the well known inverse operation for a generator, mechanical force is applied to rotate the shaft which produces flux in the main air gap and this in turn induces an electrical current in the stator windings 31b. The motor-generator dichotomy is a fundamental of motor technology that is understood by all students in the art of electrical machines. It does not require therefore, further drawings, or a further written description in view of the disclosure as filed. The drawings are sufficient because they show the necessary structures including stator windings 31b. The description is also sufficient, because it must be understood to include details which are well known to those of ordinary skill in the art, which is the case here.

There were also objections to the claims as a result of claim 1 reciting a second flux, but not a first flux, and this has been corrected by deleting the term "second." Claims 1 and 13 have been amended to introduce the term "permanent magnet" before referring to its acronym "PM."

Claim 7 has been corrected by changing the word "axial" to "secondary" which has antecedent basis in claim 1.

REJECTIONS OF CLAIMS 1 AND 13 OVER THE PRIOR ART

In the present invention, the permanent magnets (PM) are configured differently and perform a different function than in Rosenberg. In the present invention, the PM elements are used to channel flux in the non-PM material to the air gap and to prevent flux from leaking from the low reluctance magnetic path through the rotor iron to places other than the main air gap. The PMs are like magnetic

insulators. This density of flux and lack or flux leakage is what is meant by the term "high strength undiffused operation" in the title. In Rosenberg, the PM elements are used to supplement the magnetic field in the main air gap and they form part of the flux magnetic path to and from the air gap.

Claim 1 has been amended to recite:

"wherein permanent magnet (PM) material is disposed between the rotor pole portions for containing the component of flux in the rotor pole portions as the component of flux is conveyed to the main air gap and for inhibiting the component of flux from leaking from said pole portions prior to reaching the main air gap when said direct current is of the first polarity."

In Rosenberg, U.S. Pat. No. 3,411,027, the PM elements are used to produce the magnetic field in the main air gap and they form part of the flux magnetic path to and from the air gap.

Proof of this is found in Rosenberg in numerous places, only two of which will be mentioned here:

Claim 1, col. 7, lines 17-19 recites: "control means for controlling the useful magnetic flux of said magnets."

Fig. 2 shows the shunt path passing through PM element 7 as described at col. 3, lines 16-43.

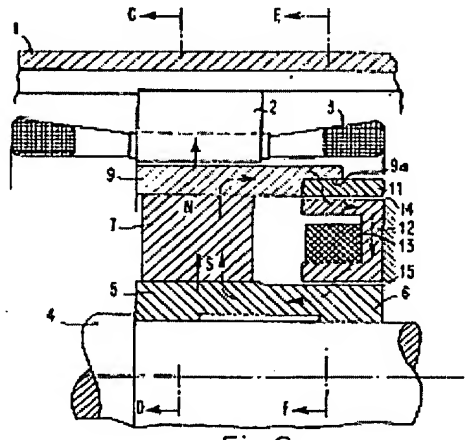


Fig.2

Rosenberg, U.S. Pat. No. 3,411,027

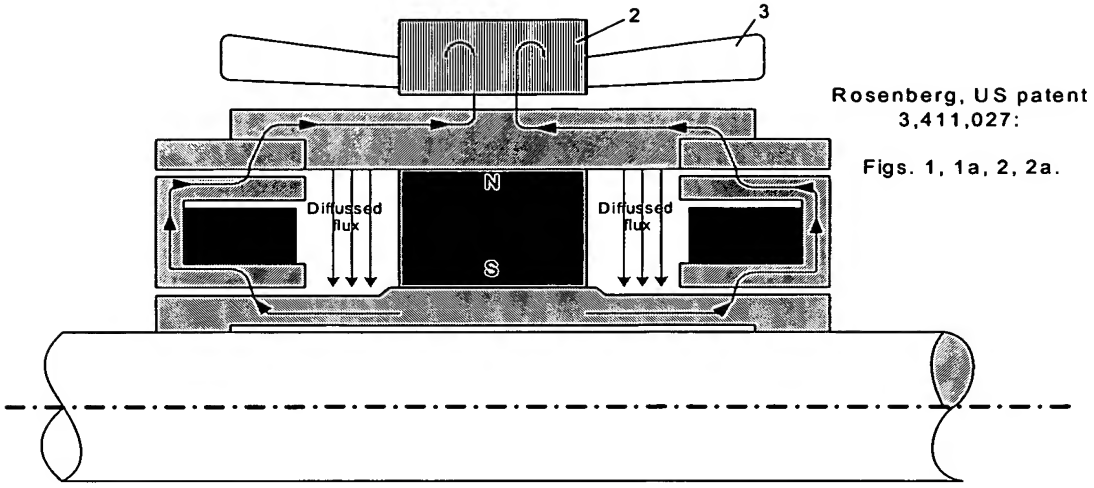
Referring to Rosenberg's figures 1, 1a, 2, and 2a, the stationary control coil structure is in a magnetic shunt relation (or in parallel) with the permanent magnet. Consequently, the control coil produces an excitation flux that goes into the stator. The Rosenberg motors taught in US Patent 3,411,027 date back to 1968, but in the passage of nearly 40 years, the Rosenberg motors have not been commercially successful.

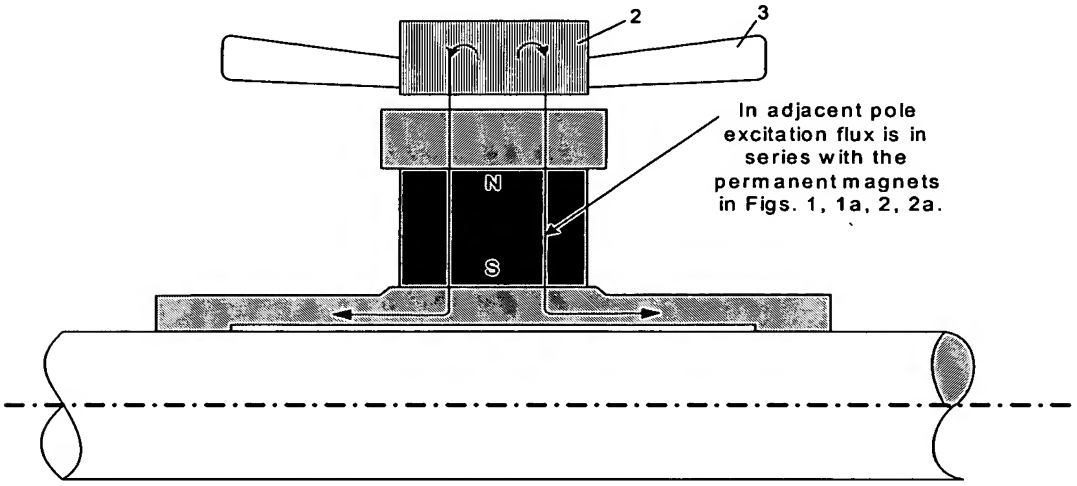
Unlike the machine of the present invention, the rotor flux diffusion (or leakage) between the poles of a Rosenberg machine is not addressed in Rosenberg's patent and the excitation flux path is either saturated or in some cases is restricted. Consequently, the air-gap flux cannot be enhanced significantly. The Rosenberg motor is a low strength machine as compared to the high strength machine of the present invention. A longer core and/or higher current would be required to compensate the low air-gap flux of the motor. It is very hard to sell a PM motor that is bigger and more costly than an induction motor, which would be the result of the Rosenberg design. The low flux enhancement and lack of compactness are reasons for the Rosenberg motors not being accepted.

Further evidence of the low strength nature of the Rosenberg machine caused by leakage flux is illustrated below. Referring to Rosenberg's figures 1, 1a, 2, and 2a, the stationary control coil structure is in a magnetic shunt relation (or in parallel) with the permanent magnet. Consequently, the control coil produces an excitation flux that goes into the stator.

A fundamental difference from the present invention, however, is that in Rosenberg's teaching the excitation flux is diffused away easily (leaks easily) or is constrained by pole paths with restricted cross sectional areas. In addition, the excitation flux path is in series with the PM elements which have a much lower magnetic saturation level (ability to carry flux) than the poles of the present invention. As a result, the flux enhancement of the

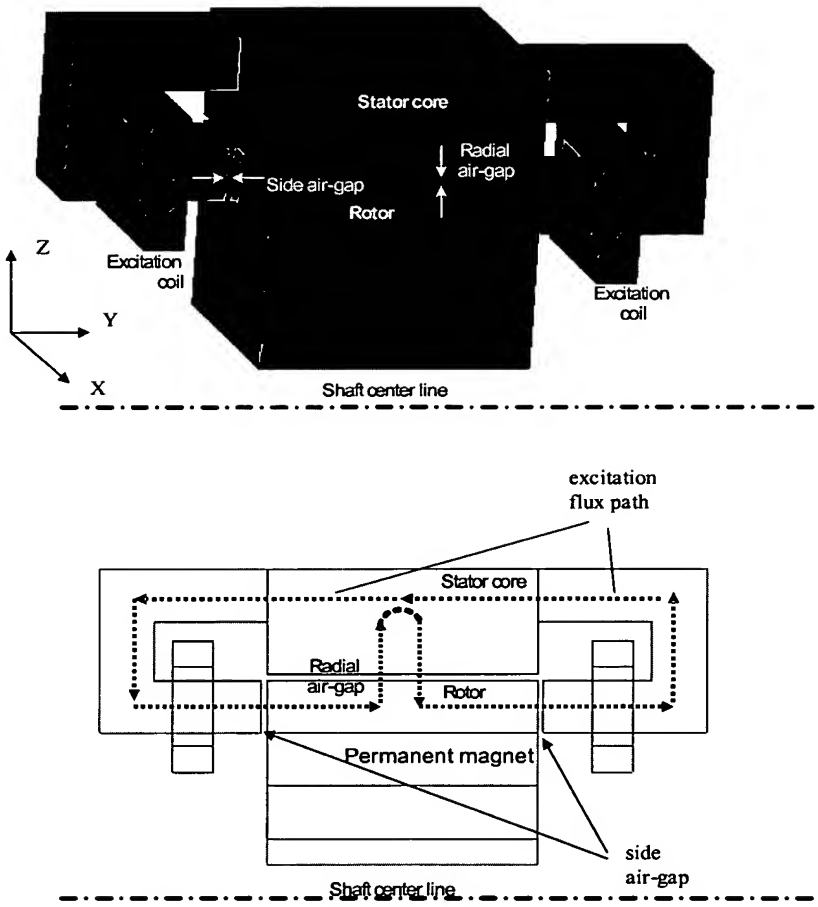
Rosenberg motor is not good.





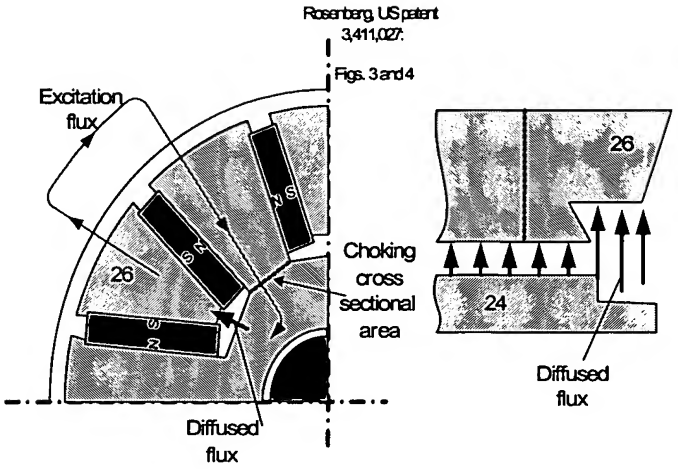
The first figure above shows flux leakage paths provided in Rosenberg. In the second figure, it is shown how Rosenberg is producing flux to flow through the PM material as part of its magnetic path to the main air gap.

In the machine of the present invention shown below, the diffusion of the excitation flux is contained by the permanent magnets and the excitation flux is not in series with the permanent magnet as conceptually shown in the following figure. Consequently, the flux enhancement is significantly stronger than that of the Rosenberg machine. The present invention is teaching a *high strength* and *undiffused* technology.



Schematics of the Present Invention

The same conclusion of low flux enhancement can be drawn from Rosenberg's Fig. 3 and 4 shown below in which there is flux diffusion (leaking) and choking off or restricting the flow of the excitation flux.



Rosenberg's teaching would result inpoor flux enhancement

Thus, it is submitted that the Examiner's statement in paragraph 13 rejection of claims 1 and 13 in the Office Action that "it is inherent that permanent magnets on the rotor (in Rosenberg) convey the flux to the air gap and prevent inhibit flux leakage from the pole portions," did not understand the difference between using the PM material to convey flux directly to and from the primary air gap as in Rosenberg, and using the PM material to contain the flux and prevent its leakage from pole portions that will convey a higher density of flux than PM material.

The above discussion means that the rejection of the claims over Rosenberg in view of various references should be withdrawn.

Claims 7 and 8 were indicated as allowable over the art of record if other non-art rejections were resolved, and such indication is gratefully acknowledged.

In addition, attention is called to Claim 5 which further recites a specific configuration for the poles and PM's of the present invention for carrying out high strength undiffused operation.

New claims 19, 20 and 21 are presented containing limitations which parallel claims 5, 7 and 8.

These claims are believed patentable for additional reasons in addition to claims 1 and 13 from which they depend.

REPLY TO DOUBLE PATENTING REJECTION

The present application should not be rejected over Appl. No. 11/019,075 for obviousness-double patenting. The purpose of the obviousness-double patenting rejection is to prevent an applicant from extending the patent term for non-identical claims in a later application, but nevertheless claims deemed obvious in view of the first application.

Due to the earlier effective filing date of this application (Sep. 23, 2003), it is not possible to extend the term of protection herein past the term of Appl. No. 11/019,075 (eff. filing date under 35 U.S.C. 120 of May 18, 2004), so the double patenting issue does not apply to this application based on Appl. No. 11/019,075.

As to Appl. No. 10/848,450, that application has the same earliest effective filing date as the present application under 35 U.S.C. 154 (a) (2) (eff. filing date of Sep. 23, 2003 under 35 U.S.C. 120), so again there is no opportunity to extend the term of that patent past the term of any patent issuing on the present patent application. Obviousness double patenting does not apply because any patent issuing from 10/848,450 already has the same term as any patent issuing from the present application under 35 U.S.C. 154 (a) (2).

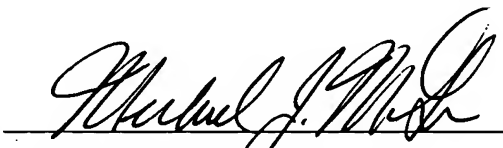
Applicant has amended claims 1 and 13 herein, and will not present any identical claims in the other mentioned applications. The claims in those applications will be amended to patentably distinguish over the claims herein.

(Go to next page)

CONCLUSION

In view of the amendment and remarks, reconsideration of the application is respectfully requested. Claims 1-21 remain pending and a Notice of Allowance for these claims is earnestly solicited.

Respectfully submitted,

By: 

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